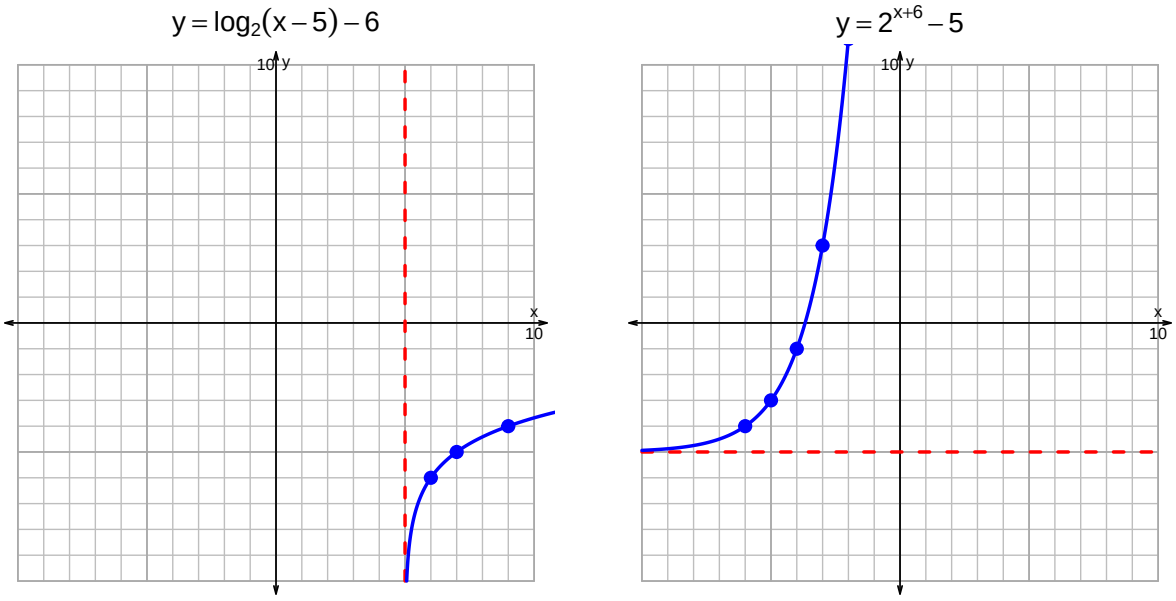
Name: Date:

s18quiz: EXP LOG (Solution v4)

1. Graph $y = \log_2(x-5) - 6$ and $y = 2^{x+6} - 5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$17 = \left(\frac{4}{7}\right) \cdot 10^{-5t/3}$$

Divide both sides by $\frac{4}{7}$.

$$\frac{17 \cdot 7}{4} = 10^{-5t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{17 \cdot 7}{4}\right) = \frac{-5t}{3}$$

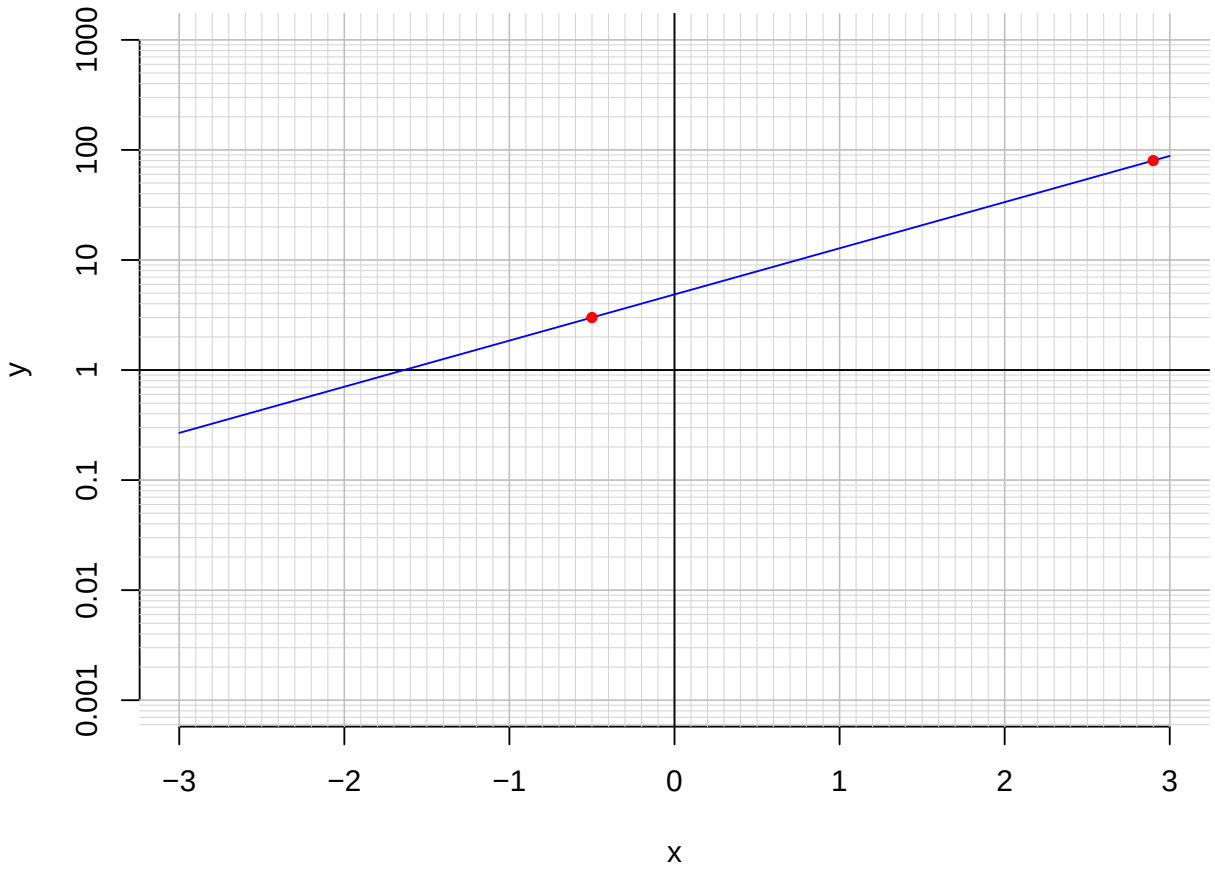
Divide both sides by $\frac{-5}{3}$.

$$\frac{-3}{5} \cdot \log_{10}\left(\frac{17 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{-3}{5} \cdot \log_{10}\left(\frac{17 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 4.86 \cdot e^{0.966x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.5)$.

$$f(-0.5) = 3$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.966} \cdot \ln\left(\frac{x}{4.86}\right)$$

c. Using the plot above, evaluate $f^{-1}(80)$.

$$f^{-1}(80) = 2.9$$